

# New and little known armoured scales (Homoptera: Diaspididae) from South Africa - 3

by

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In the present study twelve species of Diaspididae are dealt with of which *Diaspis aequalis*, *D. delottoi*, *Formosaspis karroo*, *Morganella acaciae*, *Lindingaspis equipora*, *Rungaspis arcuata*, *Selenaspis latus* and *Tecaspis angularis* are described for the first time; *Chionaspis ambiguus* Brain, *Tecaspis kiggelariae* (Brain) and *T. visci* (Brain) are redescribed, the first being transferred to *Andaspis* MacGillivray; and *Aulacaspis madiunensis* (Zehnt.) is recorded from South Africa for the first time.

Holotypes will remain with the National Collection of Insects of the Plant Protection Research Institute, Pretoria; paratypes will be deposited in the British Museum (Natural History), London and the United States National Museum, Washington.

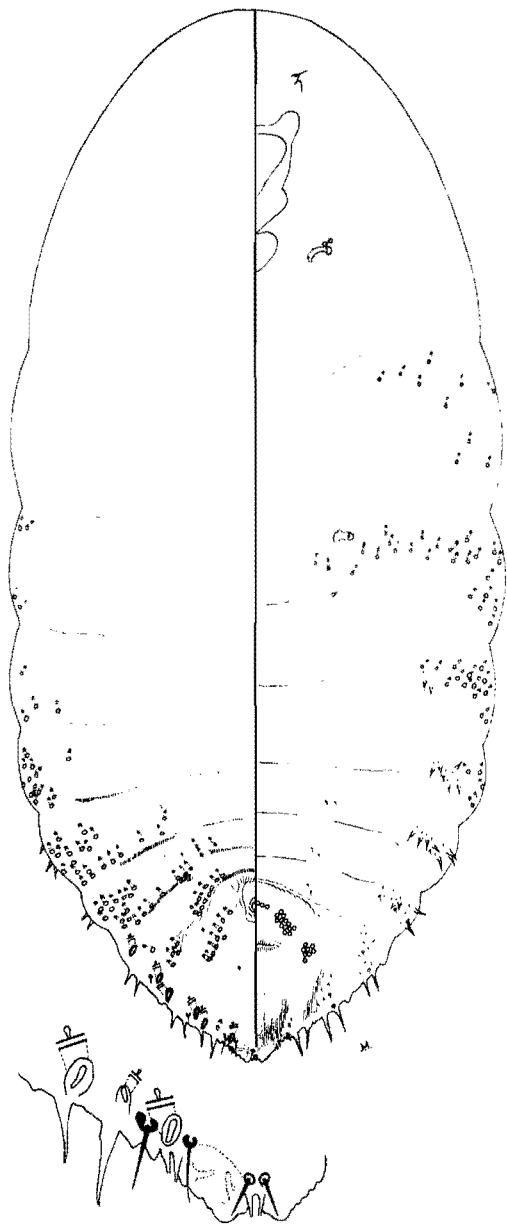
*Andaspis ambigua* (Brain, 1920) **comb. nov.**, fig. 1

**Chionaspis ambiguus** Brain, 1920, *Bull. ent. Res.* **10**:97.

**Unachionaspis ambigua** (Brain); MacGillivray, 1921:337; Hall, 1946:538.

Scale of adult female elongate, about 2.3 mm in length, brown in colour. Male puparium not seen.

Mounted adult female more or less oval but often tapering anteriorly; about 1.3 mm long; prosoma membranous at maturity. Antennae with one to three hairs. Anterior spiracles with two or three parastigmatic pores, posterior spiracles without. Median lobes with a single preapical notch on the mesal margins and three to five on the outer margins which are straight, very much longer than the mesal margins, and oblique to the long axis of the body; second lobes bilobulate, conical, with the inner lobule slightly larger than the outer; other lobes obsolete. Gland tubercles few in number: pro- and mesothorax 0, metathorax 1-3, abdominal segment (i) 4-8, (ii) 1-8, (iii) 5-9, (iv) 3-7; pygidial gland spines simple, conspicuous, paired on segments (v) to (viii) and between the median lobes; those between the median and second lobes short, never extending beyond the former. Six large marginal macroducts occur on each side of the pygidium; the normal pygidial macroducts number as follows: segment (iv) 17-27 which may or may not be divided into submarginal and submedian series, (v) 3-5 submarginally and 7-12 submedially, (vi) one submarginally near



**Fig. 1.** *Andaspis ambigua* (Brain)

the seta indicating the position of segment (vii) and 5-12 submedially. Paraphyses absent. Transverse bar across base of median lobes also absent. Perivulvar pores present in five groups with the following number per group: median 5-8 [7-11], anterior laterals 10-13, posterior laterals 8 [6-9]. Anus situated near the base of the pygidium.

**MATERIAL EXAMINED:** Fort Beaufort (Eastern Cape Prov.), June 1913 on Lilac (*Syringa vulgaris* L., Oleaceae), C. P. Lounsbury; two of Brain's slides with three specimens (C. K. B. 263), and four slides with five specimens (H. C. 2116) mounted from the original dry material. The material is however in rather poor condition.

**NOTES:** This species was not available to Hall (1946) when he revised the Ethiopian Diaspidini, but he stated that he was doubtful of the generic assignment made by MacGillivray. On an examination of the above material it is quite clear that its placement in *Unachionaspis* MacG. (type species *Chionaspis colemani* Kuwana, which is a synonym of *Fiorina signata* Maskell) is an error. Although the shape of the median lobes is not typical of the genus *Andaspis* MacG. (type species *Lepidosaphes hawaiiensis* Maskell), its placement here seems indicated. In Williams' (1963) key to the species of this genus, *ambigua* runs to couplet 18 but may be distinguished from *A. antidesmae* Rao in the length of the dorsal setae between the median lobes, the shape of the scleroses at the basal angles of these lobes and by the presence in the Brain species of a normal macroduct between the first two large marginal ducts. *A. ambigua* differs from *kashicola* (Takahashi) in having more submedian macroducts on segment (vi) and in the absence of a distinctly sclerotized transverse bar at the base of the median lobes.

*Aulacaspis madiunensis* (Zehntner, 1898)

**Chionaspis madiunensis** Zehntner, 1898, Meded. Proefstn Oost-Java, Ser. 3, Nr. 6 : 1; Newstead, 1919 : 200.

**Sclopetaspis madiunensis** (Zehntner); MacGillivray, 1921 : 324.

**Aulacaspis wakayamensis** Kuwana; Takahashi, 1935 : 12 (misidentification).

**Aulacaspis madiunensis** (Zehntner); Takahashi, 1940 : 26; Hall, 1946 : 505; Scott, 1952 : 38.

**MATERIAL EXAMINED:** Mt Edgecombe (Natal), under glass, 3.IX.1965 on *Saccharum officinarum* L. (Gramineae), J. Dick.

**NOTES:** Dr Dick reports that this species is widespread in the Natal sugar-cane belt, but of no economic importance. The fact that one variety in a field trial did, however, become heavily infested would indicate that it may reach pest proportions on certain cane varieties.

This is the first record of this species from South Africa.

*Diaspis aequalis* spec. nov., fig. 2

Scale of adult female white, subcircular, about 1.3 mm in diameter exuviae subcentral or lying at the margin; ventral scale very well developed, uniting with the dorsal scale so as to entirely enclose the female. Male puparium white, elongate, parallel-sided, non-carinate, about 0.8 mm long.

Adult female broadly turbinate, 0.7-1.2 mm in length; prosoma membranous at maturity and without lateral lobes. Antennae with a single hair. Anterior spiracles with one to five parastigmatic pores, posterior spiracles without or with one or two. Median lobes sunken into the pygidium to form a deep, wide notch; inner edges serrate, diverging, much longer than the outer. Second lobes bilobulate with the inner lobule largest. Third lobes small and monolobulate. Marginal spur on the fourth segment absent. Scleroses at the basal angles of the median lobes small, inconspicuous. Gland spines numerous, three to five occurring marginally between the first and second and second and third lobes. Dorsal pygidial macroducts numerous, extending as far as segment (vii) but absent on the thoracic segments; marginal ducts not differentiated in size from those on the dorsum; submedian series present as far as segments (vi) and (vii) but on these segments not clearly separated from the submarginal ducts; on segments (ii) to (v) they number as follows: (ii) 0-3, (iii) 3-11, (iv) 7-12, (v) 6-11, and one to three marginally between the median lobes. Ventral pygidial microducts numerous, arranged segmentally in submarginal groups. Perivulvar pores present in five groups with the following number of pores in each: median 8-18, anterior lateral 6-19, posterior lateral 4-9. Anal orifice relatively small, situated at about the apical quarter of the pygidium.

MATERIAL EXAMINED: Bain's Kloof (Wellington Distr., C. P.) 1.IX.1965 on *Leucadendron daphnoides* Meisn. (Proteaceae), D. J. Rust. Described from adult ♀-holotype (H. C. 1935/3) and 11 adult ♀-paratypes.

NOTES: This species apparently differs from all others in the genus in having as many as three to five gland spines in the first and second interlobular spaces; other unusual characters of this species are that the dorsal and marginal macroducts are the same size, more than one marginal macroduct may occur between the median lobes, and the numerous ventral pygidial microducts.

Because of the above departures from the type species, *Diaspis echinocacti* (Bouché), it is with some hesitation that this species is placed in *Diaspis*.

*Diaspis delottoi* spec. nov., fig. 3

Scale of adult female dirty white, usually irregular in shape due to the pubescent surface of the host plant, but otherwise subcircular, exuviae pale yellow and situated at one end. Male puparium elongate, about 1 mm in length, more or less parallel-sided with a faint median carina; similar in colour to that of the female.

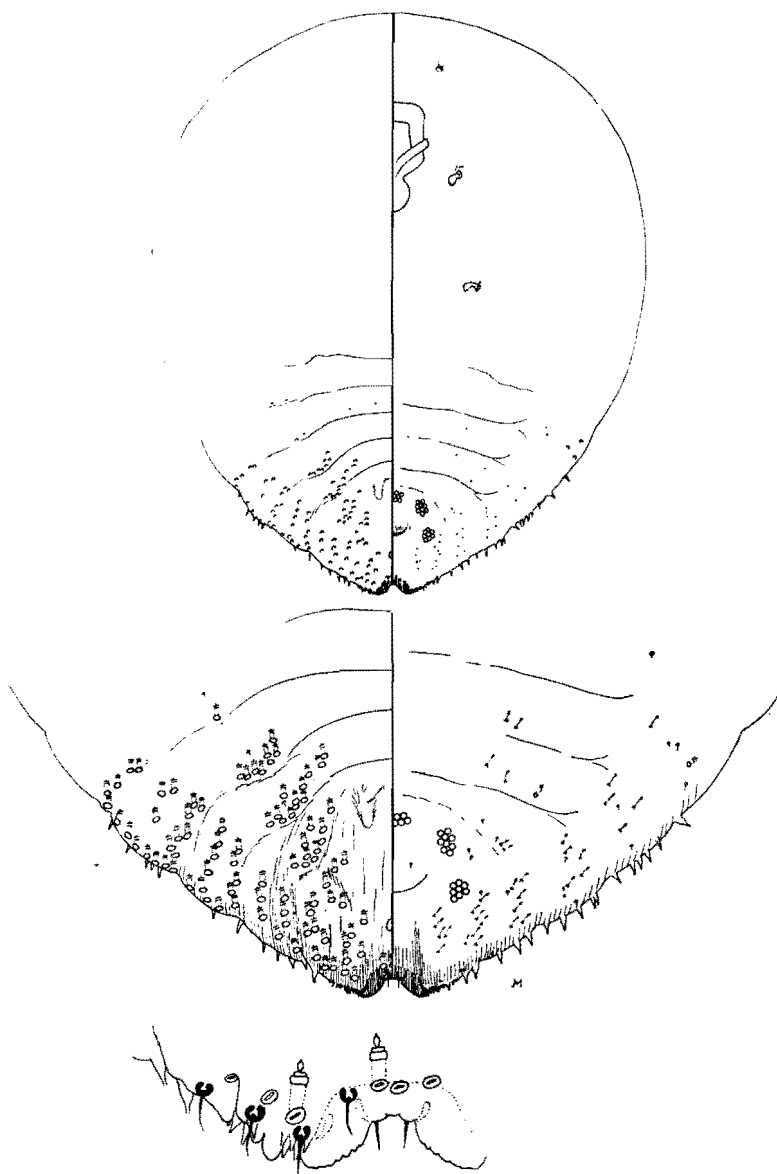


Fig. 2. *Diaspis aequalis* spec. nov.

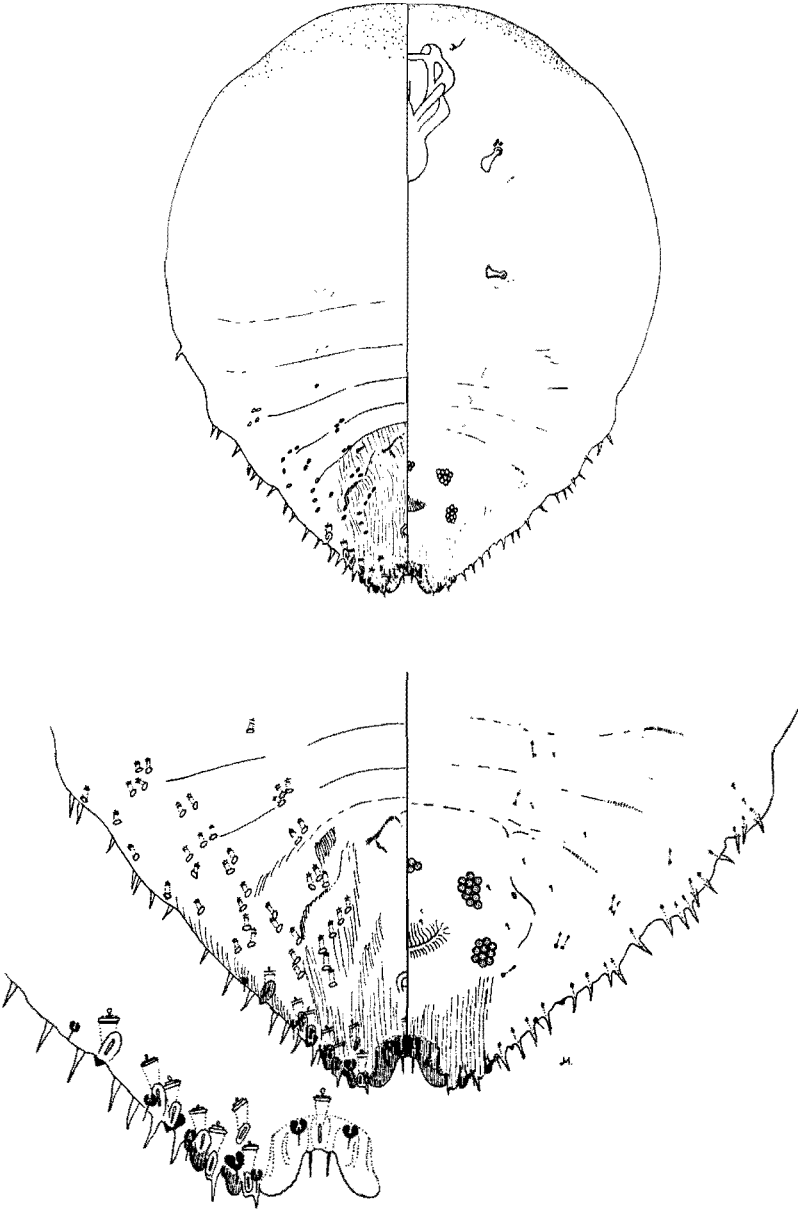


Fig. 3. *Diaspis delottoi* spec. nov.

Adult female turbinate, 0.5-0.8 mm in length, prosoma membranous at maturity except for the cephalic margin which is slightly sclerotized. Antennae with a single hair. Anterior spiracles with two or three parastigmatic pores, posterior spiracles without. Median lobes sunken deeply into the pygidium forming a large deep notch; edges finely serrate. Second and third lobes present, monolobulate, with a basal notch on their exterior margins. On the margins of segments (iv) and (v) there is a small, conical, sclerotized spur, and from the mesal angle of the spur on segment (v) there arises a small but clearly visible sclerosis. Gland spines numerous, arranged more or less evenly on the margins of segments (ii) to (vii). Dorsal pygidial macroducts of two distinct sides: six large macroducts occur marginally on segments (iv) to (vii) the second and third and fourth and fifth ducts being paired; a large duct also occurs marginally between the median lobes and submarginally anterior to the second lobe; other ducts smaller, arranged in irregular submarginal series and more regular submedian series, the latter on segments (ii) to (v) consisting of small groups of one to five ducts. Perivulvar pores in five groups with the following number of pores per group: median 6-8, anterior lateral 11-14, posterior lateral 6-8. Anus towards apex of the pygidium.

MATERIAL EXAMINED: Pretoria (Tvl.), 11.II.1965 on *Combretum guinzii* Sond. (Combretaceae), J. Munting. Described from adult ♀-holotype (H. C. 1774/1) and four adult ♀-paratypes.

NOTES: This species resembles *D. carissae* Hall in the shape and size of the median lobes, but differs from it in having the second and third lobes monolobulate and in having many more pygidial gland spines.

It is with pleasure that this species is named for Mr G. De Lotto as a token of appreciation for the help and advice he has given the writer on the taxonomy of scale insects over the past few years.

***Formosaspis karroo* spec. nov., fig. 4**

Adult female enclosed within the second stage exuviae which is black, broadest across the middle, but often much distorted; about 1.3 mm in length.

Adult female membranous at maturity except the venter in the vicinity of the mouthparts which is slightly sclerotized; fusiform in shape but often much distorted; 0.8 to 0.9 mm long. Antennae with two or three stout fleshy setae. Lateroventral eyespots conspicuously developed, lenticulate. Anterior spiracles with two to five parastigmatic pores, posterior spiracles without. Venter of the pygidium with 13 to 24 ducts on each side, each having the normal bulla on their inner extremity, the ducts becoming progressively smaller anteriorly. Median lobes slender, projecting very conspicuously from the margin; remainder of the margin variously notched but particularly between the median and second lobes. A pair of long setae occur on the dorsal surface of the median lobes, sometimes near the apex and sometimes nearer the base. Gland tubercles, gland spines and paraphyses absent. Dorsal ducts present only on the pygidium and reduced in

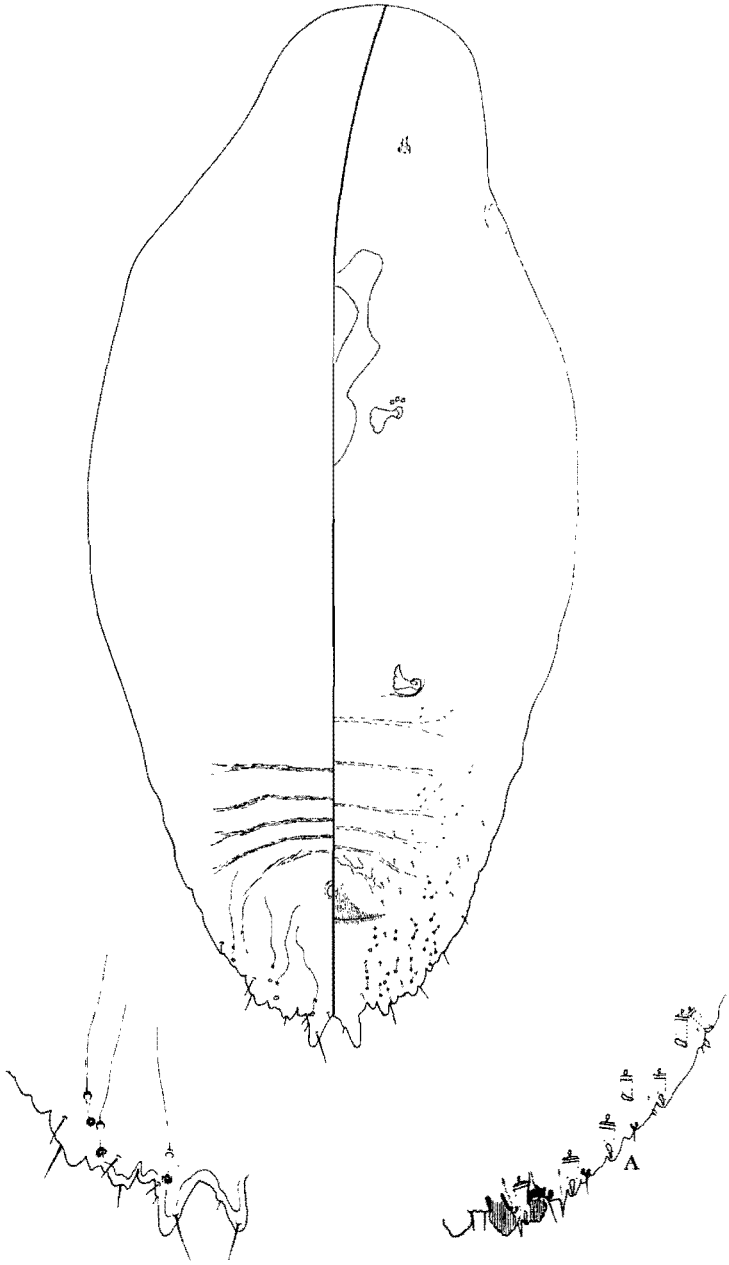


Fig. 4. *Formosaspis karroo* spec. nov., A. Idem: Pygidial margin of second stage female



number to three or four along the marginal and submarginal area. These differ from those on the venter in being slightly larger and having the bulla on their inner extremity replaced by a long filiform microduct. Anal opening towards the base of pygidium. Vulva very broad. Perivulvar pores absent.

Second instar female: Median lobes serrate, well separated, with a pair of well developed setae between them and a sclerosis slanting towards the meson arising from the basal angles; second lobes well developed, monolobulate, with edges notched, with a dorsal transverse basal sclerosis, and the sclerosis arising from the basal angles converging; third lobes represented by a small projection of the margin. Gland spines simple, occurring singly, those between the first and second and between the second and third lobes spinose, on segment (vi) they are absent but short and truncate on the other pygidial segments. Four large macroducts, each associated with a marginal spur, present on segments (iv) to (vii).

MATERIAL EXAMINED: Avondrus,  $\pm 10$  miles East of Touwsriver (Worcester Distr., C.P.) 24.II.1966 on *Acacia grandicornuta* Gerstner (Leguminosae), J. Munting. Described from adult ♀-holotype (H. C. 2081/3), nine adult ♀-paratypes and three second instar ♀-paratypes.

NOTES: This species probably does not belong to *Formosaspis* Takahashi (type species *Protodiaspis nigra* Takahashi, 1930) since all three species currently referred to it occur on bamboo and the marginal area associated with the marginal macroducts of the second stage female have not the serrations which appear to be typical of the genus. However, as the adult female of *karroo* resembles that of *F. nigra* more than the type species of any other genus at present known to the author it is tentatively placed in *Formosaspis*.

### *Morganella acaciae* spec. nov., fig. 5

Scale of adult female subcircular, about 1 mm in diameter, whitish with brown subcircular exuviae. Male puparium similar to that of the female, but oval and about 1.2 mm in length. The insects scattered singly here and there on the host plant and partly hidden under the scaly bark.

Adult female turbinate, prosoma slightly sclerotized at maturity; length when mounted 0.8 to 0.9 mm. Marginal thoracic tubercle rudimentary. Parastigmatic pores absent. A dorsal submarginal boss present on the prothorax and first abdominal segment. Median lobes with their long axes converging, with a large preapical notch on their exterior margin and without a conspicuous basal sclerosis projecting into the pygidium; other lobes obsolete. Two small spinose plates which are bent towards the meson occur next to the median lobes; three long, variously fimbriate plates occur on segment (vii) and three on segment (vi), the latter each provided with a small tubercle on the inner basal angle through which a microduct opens; no plates between the median lobes. Dorsal marginal setae on segment (viii) short, stout, not exceeding the median lobes in length,

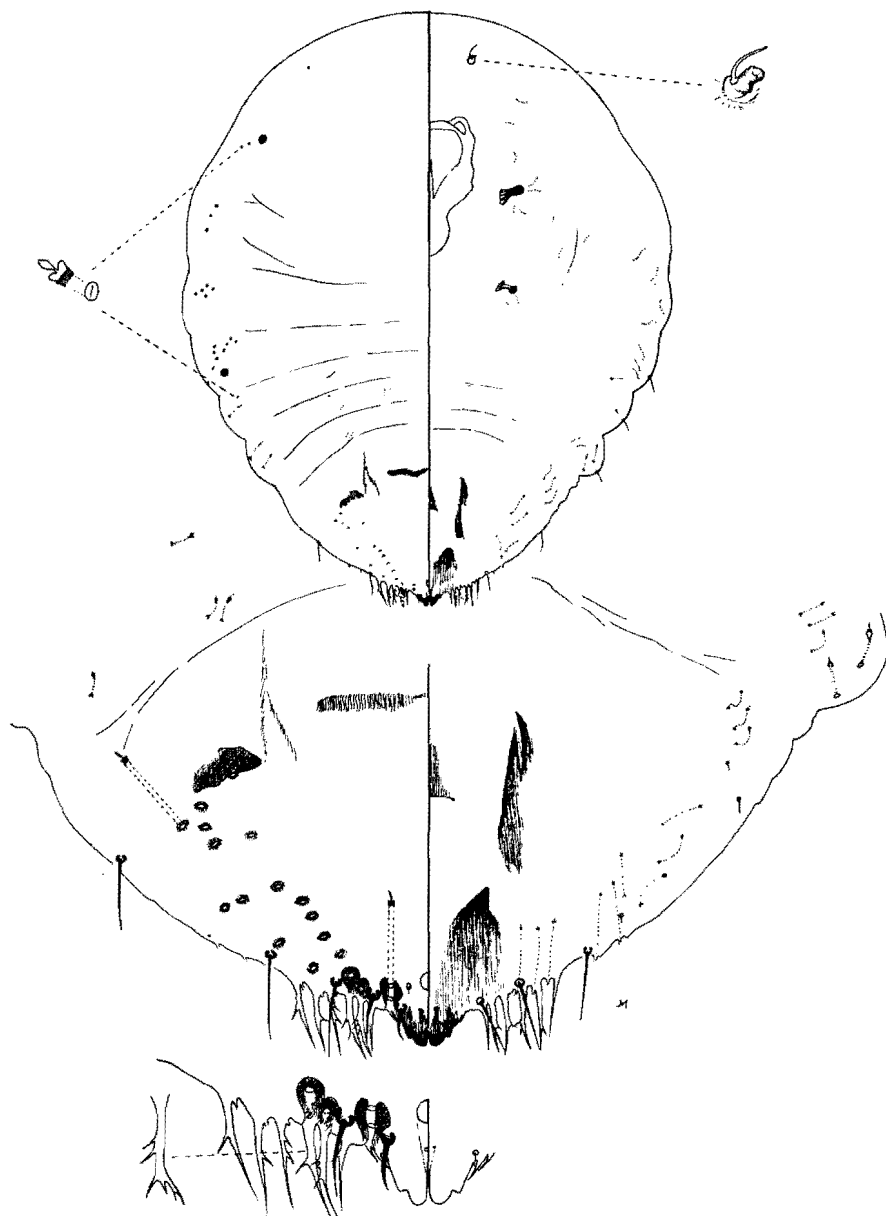


Fig. 5. *Morganella acaciae* spec. nov.

ventral setae on this segment very small and inconspicuous; dorsal and ventral setae on segments (v) to (vii) long, slender, more or less of equal length, dorsal seta on segment (iv) also long and slender but ventral seta small and inconspicuous. Dorsal pygidial ducts occur as follows: one marginally between the median lobes; two in the first furrow bounded by paraphyses; a fairly regular row of 6 to 11 ducts rises obliquely up the pygidial surface to the lateral basal apophysis, in this row the two ducts nearest the margin are enclosed in a sclerotized area; the third row rises from the seta indicating the position of the sixth abdominal segment to the basal apophysis. On the prepygidial segments there are dorsal submarginal clusters of small ducts as far forward as the cephalic area. Ventral submarginal microducts as illustrated. Perivulvar pores absent. Anal opening very close to the median lobes: distance from apex of median lobes to posterior edge of the anus is 24 to 27  $\mu$ . Paravulvar sclerites well developed.

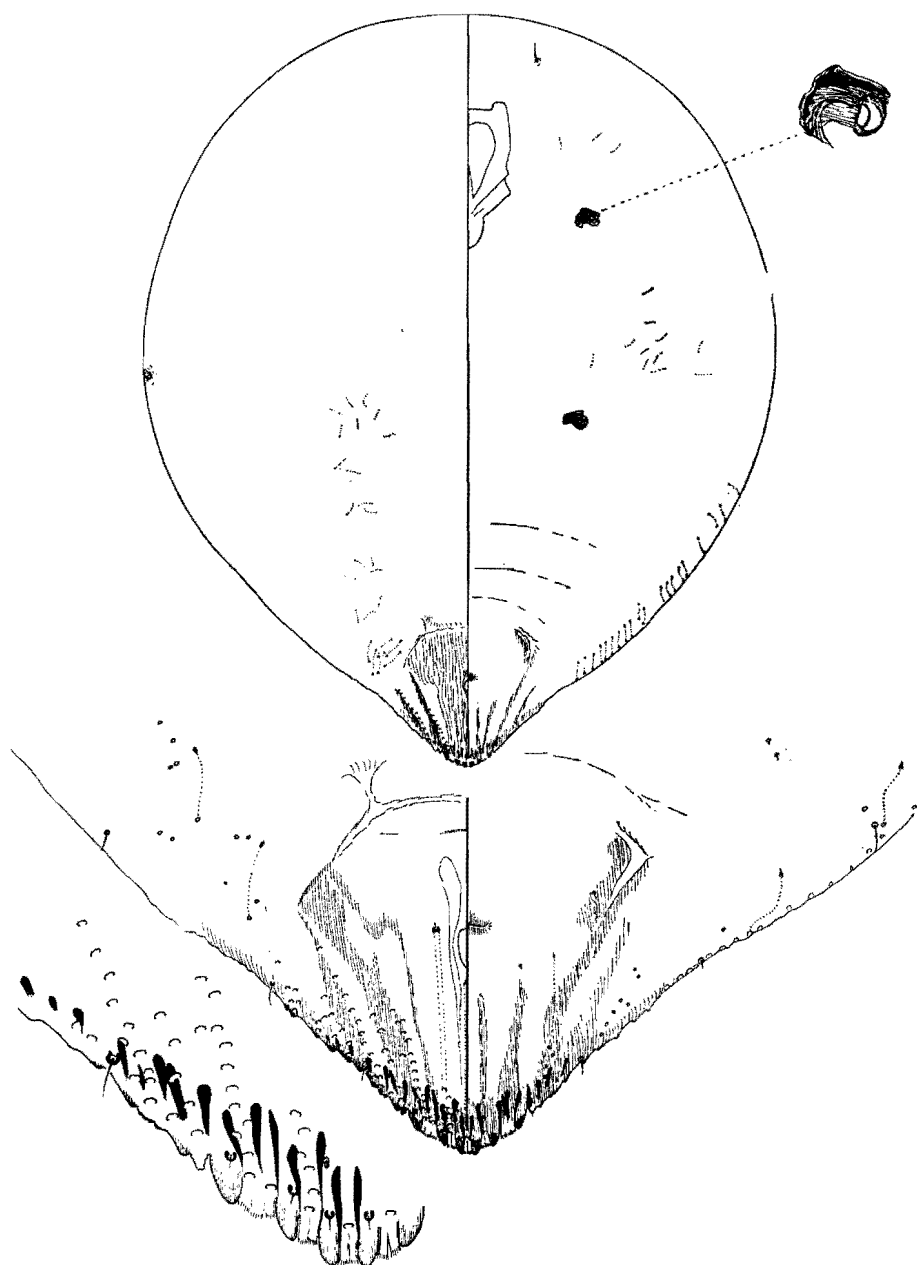
**MATERIAL EXAMINED:** Pretoria (Tvl.) 28.I.1965 on *Acacia karroo* Hayne (Leguminosae), J. Munting. Described from adult ♀-holotype (H. C. 1775/1), which is figured, and nine adult ♀-paratypes. This material was compared with two paratypes and other material of *M. conspicua* (Brain) from *Acacia* sp.

**NOTES:** This species resembles *M. conspicua* very closely but may be distinguished from it as follows: the plates on segments (vi) and (vii) are irregularly fimbriate; those exterior to the median lobes are much smaller; in the absence of a basal sclerosis projecting into the pygidium from the median lobes; the presence of two ducts and not one, enclosed by a sclerotized area on the margin between the setae indicating the position of segments (vi) and (vii).

***Lindingaspis equipora* spec. nov., fig. 6**

Scale of adult female subcircular, 2 to 2.5 mm in diameter, chocolate-brown in colour with exuviae dark brown, subcentral and sometimes circumscribed by a whitish ring. Male puparium similar in colour to that of female, but oval in shape and about 1.5 mm in length.

Adult female broadly turbinate, with a membranous prosoma and 3.6 to 5.4 mm long when mounted; pygidium rather acute. Thoracic tubercles small, lenticulate and situated at a level slightly anterior to the posterior spiracles. Parastigmatic pores absent. Three pairs of lobes present: median lobes longer than broad, parallel or slightly divergent, without notches, inner margins straight, outer regularly curved; second and third lobes similar in shape to the median but becoming progressively stouter, outer margin of third lobes sometimes finely serrate. Plates slightly shorter than the lobes, apically fimbriate, a pair between the median lobes, a pair between the median and second lobes, three between the second and third lobes but absent anterior to the latter except for a plate-like process adjacent to it. Margin irregularly dentate between the seta indicating the position of segment (iv), and the third lobe. Marginal and dorsal pygidial ducts more or less the same size, marginal ducts distributed as follows: one

Fig. 6. *Lindingspis equipora* spec. nov.

between the median lobes, one between the median and second lobes, two between the second and third lobes and one basad to the plate-like process exterior to the third lobes; a series of ducts is also to be found along the margin of segments (v) and (iv) and the prepygidial abdominal segments. Paraphyses on segments (vi) to (viii) well developed, on segments (iv) and (v) they are greatly reduced in number. Perivulvar pores absent. Anal opening more or less in the centre of the pygidium and only slightly posterior to the vulva; conspicuously larger than the median lobes.

**MATERIAL EXAMINED:** Karroo Botanical Gardens, Worcester (Cape Prov.) 2.XII.1964, occurring in pest proportions on *Cheiridopsis cuprea* N.E.Br. (Aizoaceae) J. Munting. Described from adult ♀-holotype (H. C. 1721/3) and 8 adult ♀-paratypes.

**NOTES:** This species comes close to *L. benaensis* Balachowsky but may easily be distinguished from it in having longer paraphyses on segments (vi) to (viii), in having the pygidial macroducts all the same size, and in the pattern of the ventral pygidial sclerotization.

***Rungaspis arcuata* spec. nov., fig. 7**

Scale of adult female subcircular, covered with dust and particles of sand, apparently brownish in colour, about 1.5 mm in length. Male puparium whitish, of the usual aspidiotine shape and about 1.2 mm in length.

Mounted female turbinate with the prosoma sclerotized at maturity; 0.5 to 1.2 mm in length. Antennal tubercle with a single hair. Microducts associated with the anterior and posterior spiracles but parastigmatic pores absent. Median lobes well developed, slightly converging, with a subapical notch on the inner and outer margins; a broad conspicuous sclerosis projects from the base of each lobe into the pygidium. Other lobes obsolete. Two small plates occur between the median lobes, two between these lobes and the seta of segment (vii), two between this seta and that on segment (vi). All plates short and truncate and apparently with a microduct opening through their apices, small fleshy tubercles also occur on the margin of segments (v) and (vi). Paraphyses entirely absent. Pygidial macroducts long and slender, arranged as in figure, numbering 12 to 18 on each side of the pygidium; at least one but never more than two between the median lobes. A single smaller duct is usually present submedially at the base of the pygidium. Dorsal marginal seta at the outer basal angle of the median lobes very thin and hair-like, almost invisible except under high magnification. Dorsum of pygidium with a characteristic sclerotization: a large median sclerotized area narrowing posteriorly towards the scleroses at the base of the median lobes. In addition to the usual two basal, transverse submedian scleroses, there also occurs on the dorsum a conspicuous, arcuate, median apophysis. Paravulvar scleroses with the posterior half well sclerotized while the anterior half is usually not more than a dermal fold. Perivulvar pores absent. Anal opening near the apical third of the pygidium.

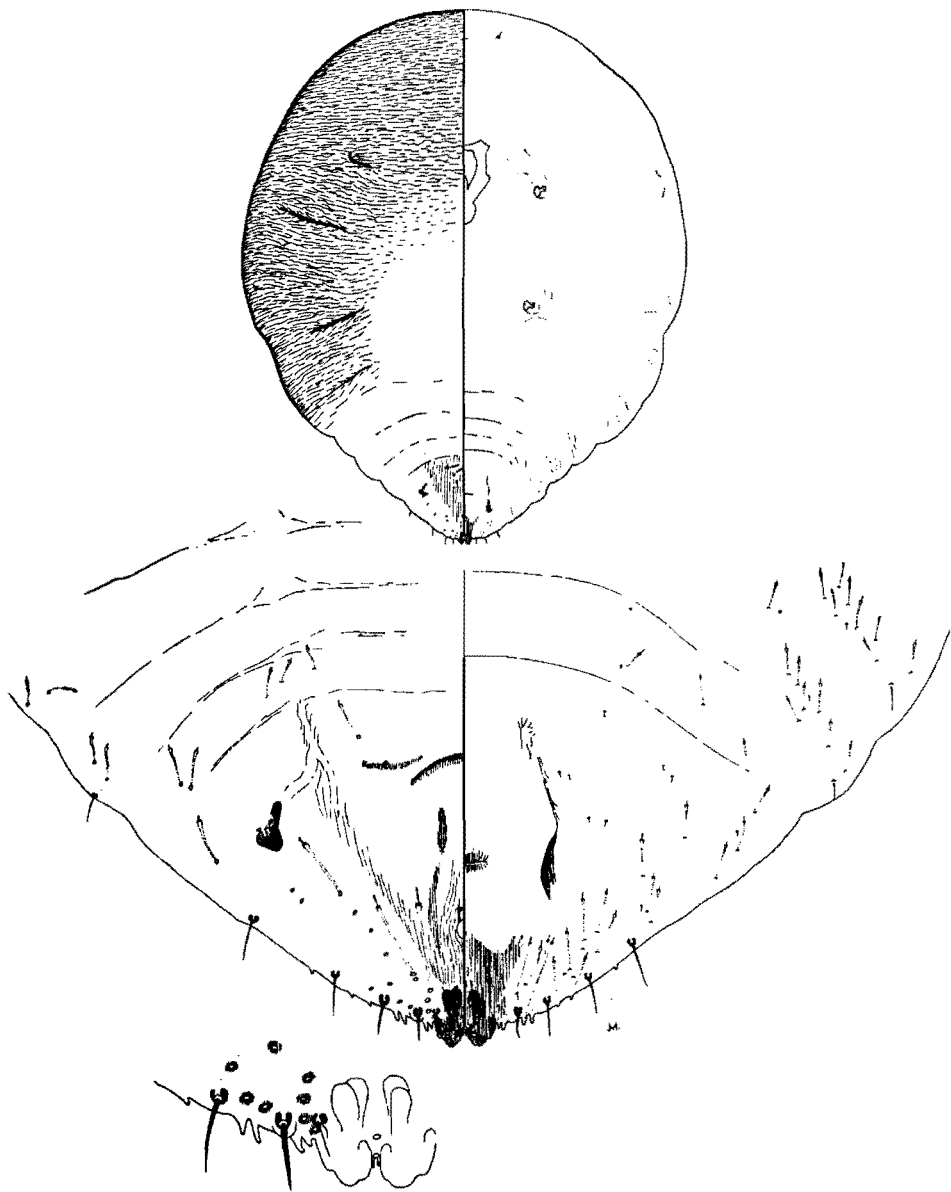


Fig. 7. *Rungaspis arcuata* spec. nov.

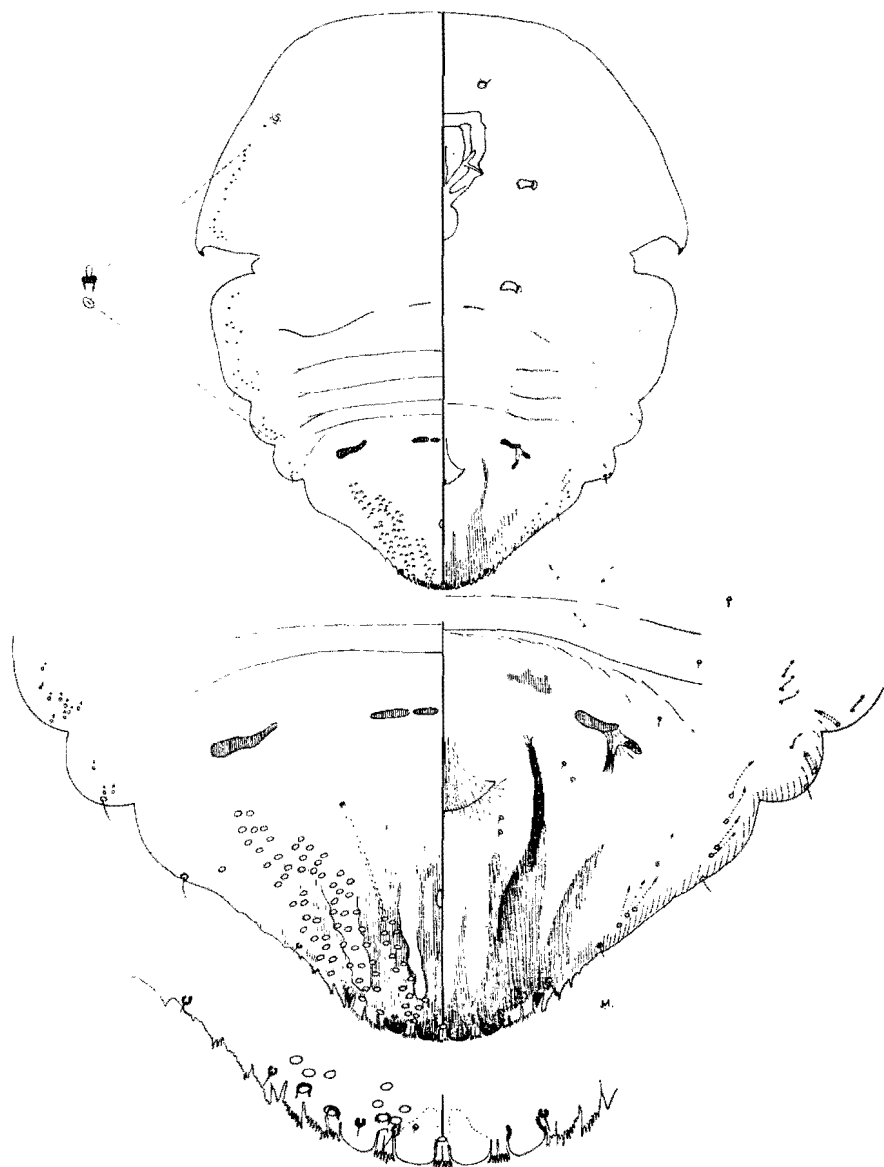


Fig. 8. *Selenaspidus latus* spec. nov.

**MATERIAL EXAMINED:** 10 miles N.E. of Gydo Pass near Prince Alfred Hamlet (Tulbagh Distr., C.P.), 1.III.1966 on *Elytropappus rhinocerotis* Less (Compositae), J. Munting. Described from adult ♀-holotype (H. C. 2156/9) and eight adult ♀-paratypes.

**NOTES:** This is the third species currently referred to this genus, *R. trabuti* Balachowsky the type species, having been described from the central Sahara and later recorded from Iran, and *R. macroloba* Kassauri described from Iran (Balachowsky, 1958). *R. arcuata* differs from *trabuti* in having but two dorsal ducts between the median lobes, the absence of the paraphysis at the outer angle of the third lobes, and in not having the second and third lobes so well developed.

***Selenaspidus latus* spec. nov., fig. 8**

Scale of adult female subcircular, large, being about 3 mm in diameter, whitish with dark central exuviae. Male scale ovate, about 1 mm in length.

Adult female with the prosoma strongly sclerotized at maturity, 1.2 to 2.1 mm long when mounted. Constriction between meso- and metathorax conspicuous. Anterior margin of prosoma straightened and smooth without any projections. Thoracic tubercle pointing backward and curved towards the meson. Submarginally on the prosoma and prepygidial segments there is a series of very small, short microducts extending slightly anterior to the antennae. Median lobes rounded, without notches, distinctly broader than long and with a basal sclerosis extending into the pygidium; second lobes also broader than long, and with the apical margin sloping at an angle oblique to the long axis of the body; third lobes broadly spur-shaped. Paraphyses restricted to two small ones at the basal angles of the second lobes. Plates normal: two between the median and the median and second lobes, three between the second and third lobes, and three or four anterior to the third, of these only that plate adjacent to the third lobe is well developed. Dorsal pygidial macroducts distributed as in figure, 65 to 90 occurring on each side, but never extending as far forward as the lateral basal apodeme of the pygidium. A few submarginal ventral microducts occur on segments (v) and (vi). Perivulvar pores absent, paravulvar scleroses present. Width of anal opening distinctly smaller than that of each median lobe.

**MATERIAL EXAMINED:** Hemlock (Barberton Distr., Tvl.) 14.VI.1965 on *Euphorbia ingens* E. Mey. (Euphorbiaceae), J. Munting. Described from adult ♀-holotype (H. C. 1842/10) before sclerotization had set in, and 18 adult ♀-paratypes.

**NOTES:** This species resembles *S. albus* McKenzie from which it may be distinguished by the presence of submarginal microducts on the prepygidial segments, by the shape of the median lobes and by the distribution of the dorsal pygidial macroducts.



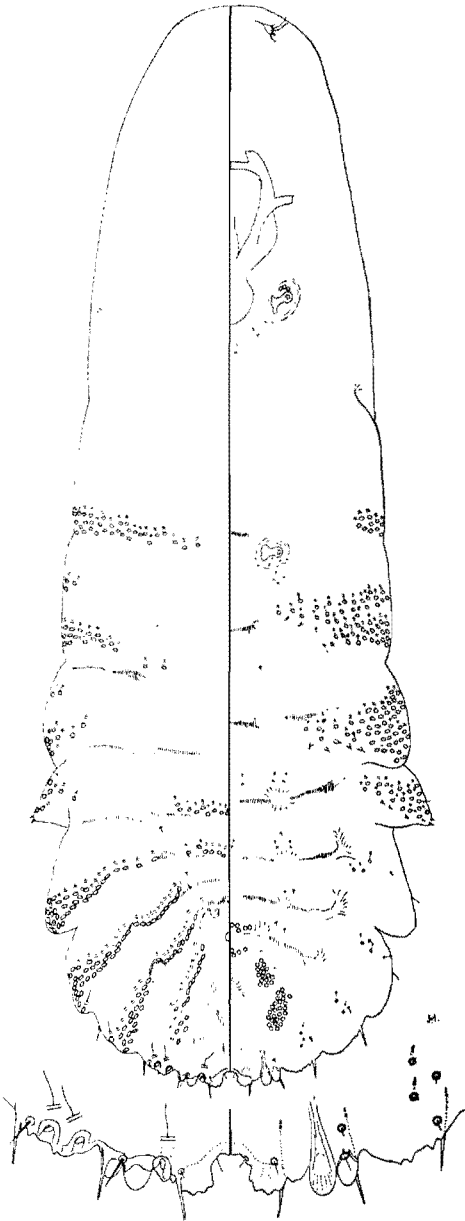


Fig. 9. *Tecaspis angularis* spec. nov.

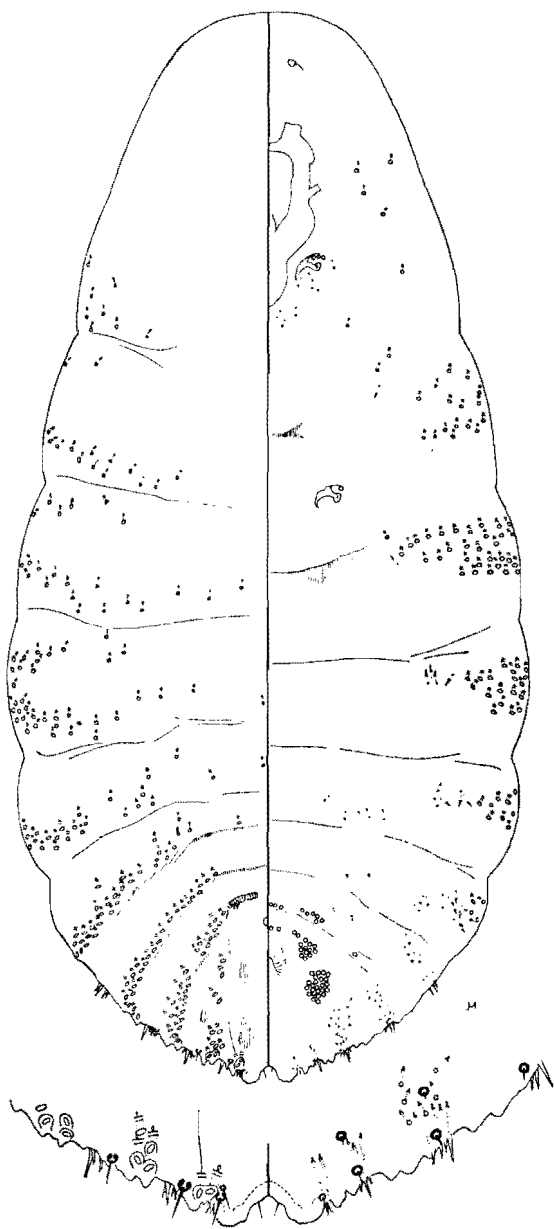
*Tecaspis angularis* spec. nov., fig. 9

Scale of fullgrown adult female about 3 mm long, 0.5 mm wide and white in colour; second exuviae pale yellow but covered with a thin layer of wax. Male puparium about 1.3 mm long, parallel-sided with a faint median carina; also white and with pale yellow exuviae.

Adult female long and slender, those mounted varying from 1 to 1.4 mm in length; prosoma not heavily sclerotized at maturity. Antennal tubercles with two long hairs. Anterior spiracles with 2 to 4 parastigmatic pores, posterior spiracles without. Pygidium broadly rounded. Median lobes projecting slightly, apically dentate, parallel-sided and converging; second lobes well developed, bilobulate, rounded, inner lobule larger than outer and with a conspicuous basal sclerosis; other lobes obsolete. Gland tubercles few in number, small and inconspicuous: 0-2 occurring on the metathorax, 4-7 on abdominal segment (i), and 5-8 on segment (ii) of which 1-3 are found on the posterior lateral angle; on the other thoracic segments as well as on segments (iii) and (iv) they are entirely absent. Pygidial gland spines simple and occurring singly on segments (v) to (viii). Dorsal macroducts on segments (iii) to (vii) number as follows: (iii) submarginal 26-36, submedian 1-6; (iv) submarg. 20-30, submed. 6-14; (v) submarg. 15-20, submed. 5-13; (vi) submarg. 2-3 (usually 2), submed. 10-16; (vii) one marginally; the submarginal and submedian series may often coalesce. The macroducts show a unique distribution pattern: absent on the ventral submarginal area of the segments posterior to the second, dorsal submedian series on segment (vi) well represented and almost extending to the margin; this series also well represented on segments (v) to (iii), then absent on segments (ii) and (i) and again present on the meta- and mesothorax; a mediodorsal series of 6-13 ducts occurs on segment (iii) and of 6-16 ducts on segment (ii). Marginal macroducts on segments (iv) to (vii) each with a filamentous microduct on its inner extremity which is slightly longer than the duct bearing it. Perivulvar pores present in five groups with the following number of pores in each: median 4-8, anterior laterals 10-21, posterior laterals 18-35; a median group of 6-10 supplementary pores present anterior to the usual median group. Anal opening placed well forward.

**MATERIAL EXAMINED:** Keiskamma Hoek (Kingwilliamstown Distr., C.P.) 15.X.1965 on *Scutia myrtina* (Burm.f.) Kurz. (Rhamnaceae), D. P. Annecke. Described from adult ♀-holotype (H.C. 1970/2) and six adult ♀-paratypes.

**NOTES:** This species resembles *T. kiggelariae* (Brain) but differs from it in the length of the microducts on the inner ends of the marginal macroducts on segments (vi) and (vii), the distribution of the ducts on the prepygidial segments, and in the angular shape of the lateral margins of segment (ii).



**Fig. 10.** *Tescapis kiggelariae* (Brain)

*Tecaspis kiggelariae* (Brain, 1920), fig. 10

**Chionaspis (Poliaspis) kiggelariae** Brain, 1919, *Bull. ent. Res.* **9** : 238 (*partim*).

**Poliaspis kiggelariae** Brain; MacGillivray, 1921: 356.

**Tecaspis kiggelariae** (Brain); Hall, 1946: 537.

"Scales clustered into large wart-like masses on the twigs and stems of food plant" (Brain, *l.c.*); scale of adult female elongate, white, about 2 mm in length with orange-brown exuviae. Male puparium elongate about 1 mm in length, non-carinate, white, also with orange-brown exuviae.

Adult female more or less fusiform; prosoma and first abdominal segment heavily sclerotized; about 0.9-1.5 mm long. Anterior spiracles with 5-10 parastigmatic pores, posterior spiracles with 0-3. Median lobes projecting from the pygidial margin, slightly divergent, irregularly scalloped apically; second lobes bilobulate with inner lobule well developed; third, fourth and fifth lobes clearly visible as well sclerotized projections of the margin. Gland tubercles and pygidial gland spines occur as follows: prothorax 0-2, mesothorax 0-1, metathorax 0-2, abdominal segment (i) 4-8, (ii) 6-10, (iii) 5-10, (iv) 4-7, (v) 2-5, (vi) 5-6, (vii) 4-6, (viii) 2; gland tubercles rather few and small, gland spines relatively numerous, simple, and on segments (v) to (vii) one is about twice as long as the others. Macroducts on segments (iii) to (vii) number as follows: segment (iii) 30-49, (iv) 28-47, (v) 24-34, (vi) 16-23, (vii) 1-3 usually 2. These ducts often divided into submarginal and submedian groups; on segment (vi) the ducts sometimes form a continuous row from the submedian to the marginal area; two ducts usually occur between the median and second lobes, in the fourteen specimens quantitatively studied two had a single macroduct here on one side of the pygidium only, and one had three, also only on one side of the pygidium, in each specimen one of the ducts has a long filamentous microduct on its inner end. Small dorsal submarginal bosses present on the first and third abdominal segments. Perivulvar pores in 10 groups, normal groups: median 0-6, anterior laterals 9-21, posterior laterals 18-33; supplementary groups: median 1-5, anterior laterals 4-10, posterior laterals 0-8. Anus in the normal position.

**MATERIAL EXAMINED:** Orchard Siding (Worcester Distr., C.P.) 8.VI. 1965 on Willow (*Salicaceae*), C. P. Lounsbury. (C. K. B. 169 & H. C. 2000); quantitative data was obtained from this material. Oudtshoorn (C.P.), Dec. 1897, on Willow, C. P. Lounsbury (C. K. B. 169a).

**NOTES:** A re-examination of the specimens in Brain's collection identified by him as *Chionaspis (Poliaspis) kiggelariae* revealed that more than one species is involved. Dr D. J. Williams, formerly U.S. Department of Agriculture, Washington, kindly transcribed the data on the type slide as "*Chionaspis (Poliaspis) kiggelariae* Brain, on Willow, Orchard Siding C.P., C. P. L. June 8, 1915, Type. No. 169". The two above-mentioned lots from willow are conspecific and form the basis for the identity of *Tecaspis kiggelariae*. The lot collected from *Kiggelaria africana* L.

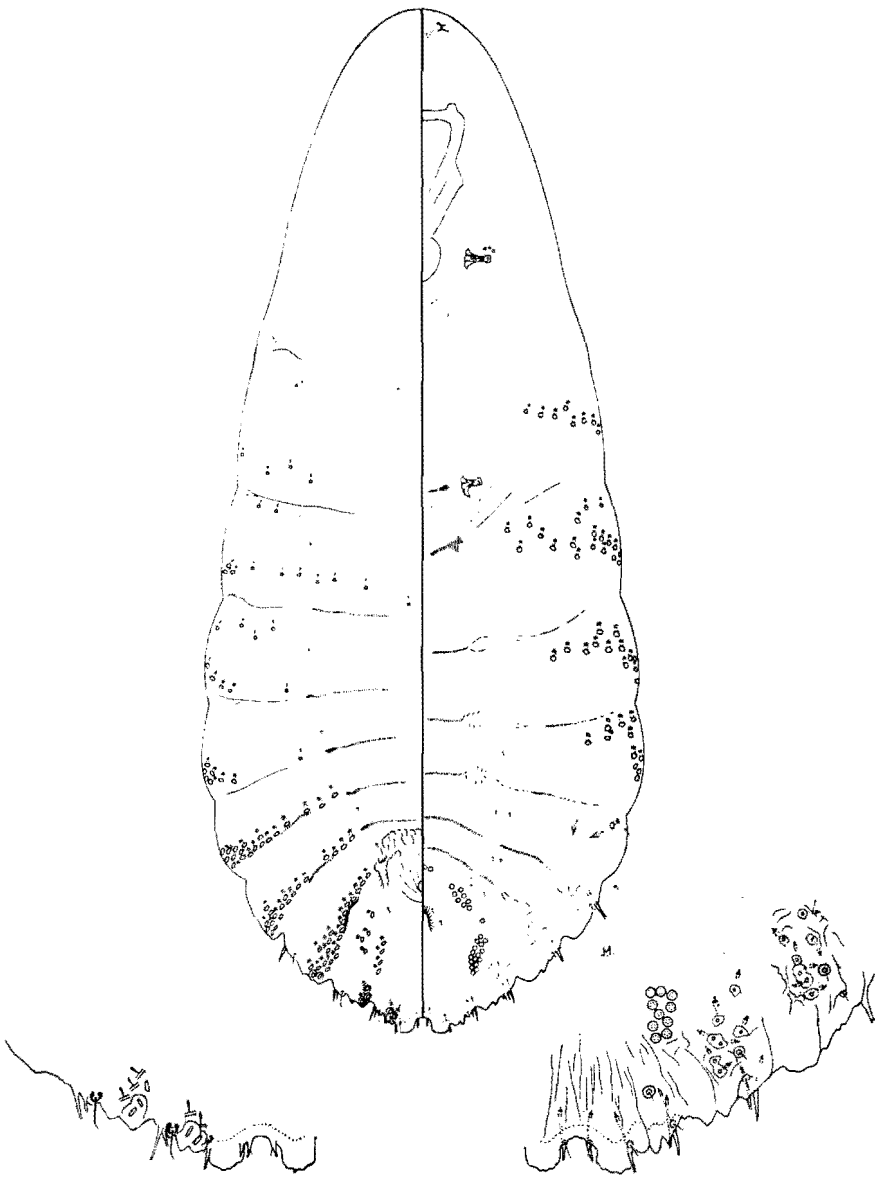


Fig. 11. *Tectaspis visci* (Brain)

from Natal, show no significant differences from *Tecaspis visci* (Brain). Because the holotype was selected by Brain from the Willow specimens *T. kiggelariae* does not become a synonym of *T. visci*.

*Tecaspis visci* (Brain, 1919), fig. 11

**Chionaspis (Phenacaspis) visci** Brain, 1919, *Bull. ent. Res.* **9** : 235.

**Chionaspis (Poliaspis) kiggelariae** Brain, 1920 : 238 (*partim*).

**Phenacaspis visci** (Brain); MacGillivray, 1921 : 350.

**Chionaspis (Phenacaspis) visci** Brain; Hall, 1929 : 370.

**Tecaspis visci** (Brain); Hall, 1946 : 537.

"Adult female scale about 2.2 mm long, elongate,  $\pm$  parallel-sided... First exuviae greyish or brownish; second exuviae covered, brown. Male puparium white, moderately elongate, usually with a prominent median ridge and two lateral ones, which are especially conspicuous at the posterior end. Exuviae pale, yellowish or almost colourless." (Brain, *l.c.*).

Adult female membranous at maturity, 0.9-1.4 mm in length. Anterior spiracles with one to five parastigmatic pores, posterior spiracles without. Median lobes subrectangular, parallel, irregularly sinuate at apex, separated by a median notch; second lobes bilobulate with inner lobule largest and usually conical, outer lobule small and conical. Gland tubercles absent on thoracic segments, on abdominal segments they occur as follows: (i) 0-2, (ii) 1-4, (iii) 2-4, (iv) to (viii) 1-2, and 2-3 between the median lobes. Pygidial macroducts all of a size and not always clearly divided into submarginal and submedian series, submedian series present only from the third segment; macroducts on each side of segments (iii) to (vii) number as follows: (iii) 18-29, (iv) 18-28, (v) 16-26, (vi) submarginal 2-5, submedian 9-16, (vii) 1-2 usually 2; the submedian series on segment (vi) may be divided into two more or less parallel series as figured or may form a single group. The microducts on the inner ends of the marginal macroducts on segments (vi) and (vii) as long as or slightly longer than the width of this end; those of the other macroducts knobbed. On segments (iii) to (v) the dorsal macroducts occur only along the posterior margin of the segments whereas on the metathorax and first abdominal segment a supplementary series consisting of ducts smaller than those on the pygidium is also found along the lateral anterior margin of the segment. A row of small dorsal ducts is spread irregularly right across the dorsum of the metathorax. Groups of five to ten microducts occur submarginally on the venter of segments (v) and (vi). Perivulvar pores present in the usual five groups: median 2-6 [3-5], anterior laterals 6-11 [4-6], posterior laterals 12-22 [4-7]; supplementary disc pores absent.

**MATERIAL EXAMINED:** Two specimens mounted from dry material bearing the following collection data: "148. N.E. Transvaal, on Mistletoe \*,

\*) The common name for *Viscum* spp. and *Loranthus* spp.